*Sixth Annual Report of the Insurance Commissioners of the Commonwealth of Massachusetts.**

IN no year since the business of life assurance commenced in this country has it advanced so rapidly as in the one just closed. The nineteen Companies now making their returns to this Office show over 10,000 new policies issued, insuring more than 30,000,000 dollars, and the whole amount insured by them exceeds 150,000,000 dollars.

Ninety-four per cent. of all this business consists of whole-life policies, kept up by equal annual premiums, which are largely in excess of the annual risks during the earlier years of the insurance, but will be in defect on all the lives that continue through the later years. Hence, to cover the entire mass of risks which increase year by year, the earlier excess of the premiums, which do not increase, must be carefully accumulated to provide for the future deficiency. To apply a test to this accumulation, that the public may know, in regard to each Company, how near it comes to the happy medium between a too costly excess and a ruinous deficiency, was the object of the law requiring us to make an annual valuation of the policies of all the Companies doing business in the Commonwealth. Though it, in effect, prescribes a net valuation by not requiring of the Companies data sufficient for any other, it does not prescribe the rate of mortality or of interest that is to be assumed as the basis of the work. In adopting the "Combined Experience" or English "Actuaries" rate of mortality, and 4 per cent. interest, we supposed we were travelling most safely between extremes, and we have the pleasure to know that the fault found with our choice has been about equally divided, as much of it making our valuation too low as too high. Four per cent., as the proper rate of interest, was fully approved by the Convention of Officers of Life Insurance Companies which met in New York last May, and we believe no objection has been made by any of the American Companies to the rate of mortality adopted. It is worthy to be remarked, however, that Prof. C. F. McCay, of Georgia, in a series of valuable articles in *Hunt's Merchants' Magazine*, on the valuation of life insurance policies, has expressed the opinion that our method of valuation requires too small a premium reserve. His argument is certainly conclusive as a reply to the mathematical gentlemen, Prof. Pierce, of Cambridge, and Messrs. Woolhouse and Neison, the English actuaries, on whose authority we were charged with doing great injustice to the International Assurance Society of London, by requiring too high a reserve! It is doubtless true, as Prof. McCay proves by example, that by the combined experience mortality, the value of policies entered below the average age of insurance will be smaller for a few years than by Dr. Farr's table, and this, so far as it has any effect, makes our valuation rather more favourable to new Companies than to old ones. But the aggregate value of policies entered at all ages will not differ much from Dr. Farr's, and especially when the Company has attained a few years' standing. Prof. McCay's own figures tend to show this. To show how the "Actuaries" rate does not probably require less reserve than Dr. Farr's—the only rate which has any claim to a higher

* We have been favoured by Mr. Elizur Wright with a copy of this Report, just published, and we give a portion of it, which we have no doubt will interest our readers. It has been necessary to omit some pages of tabular matter, and some few passages of less importance than the rest.—ED. *A. M.*

scientific authority—we give below the values of five policies of 100 dollars each, entered at five different ages, at the time when the sixteenth premium falls due, according to four different rates of mortality, at 4 per cent. interest, and also add the values by using Carlisle premiums discounted by Neison's life annuities.

Age of Entry.	Com. Ex.	Dr. Farr.	Carlisle.	Neison.	Neison and Carlisle.
20........	$11 85	$12 14	$11 99	$11 10	$12 33
30........	17 64	17 14	15 39	15 96	16 33
40........	25 57	24 51	23 48	23 14	23 36
50........	34 41	34 05	32 89	32 18	33 02
60........	43 21	42 03	41 49	42 06	41 12
Totals....	$132 68	$129 87	$125 24	$124 44	$126 16

This may serve to illustrate what is undoubtedly true, that the "Combined Experience" rate, as a means of ascertaining the proper premium reserve of an established Company, corresponds more nearly with Dr. Farr's than the other rates. For the purposes of our official valuation, it is not open to Prof. McCay's objection. And considering it as a means of adjusting the rights of different members in the same Mutual Company, it has perhaps an advantage which he does not take into account, by virtue of the probable error which he points out. When, in computing the premium, we assume, as we intentionally do, a rate of interest lower than that which will be actually realised, the effect of this reduction is to increase the premiums, but to increase those of the younger more than those of the older ages, because there is more of *time*—the food that compound interest lives on—in the case of the former. This injustice to the younger ages, from assuming an interest below the actual, may be happily compensated by a rate of mortality which makes the risk of those ages a little too small, the flexibility of one assumption correcting the excessive rigidity of the other.

It must not be inferred, from our adopting this rule of valuation as a test of the sufficiency of the actual premium reserve, that we disapprove of keeping a larger reserve. We only think it need not be left much larger at the time of distributing the surplus, or declaring dividend. The strongest believers in the deterioration of life in old Companies, by the lapse and surrender of policies on the healthier lives, have never pretended, so far as we know, that the reserve need be more than about 14 per cent. And their observations included Companies of poor credit as well as long standing, in which losses and surrenders had had a more damaging effect on the quality of the residual life than can ever occur in Companies well managed and kept in good credit. In the latter, we do not believe the deterioration of life is any reason for reserving even 3 per cent. beyond the reserve at 4 per cent. of the "Combined Experience" rate, which is founded on the mortality of Companies averaging a greater deterioration from the causes mentioned than is ever likely to occur in American Companies. Still, as a matter of general prudence and financial force, there may be ample reason for keeping a reserve 15 or 20 per cent. higher than is really needed, so that the institutions may be felt, even by the most timid, to be high and dry on the rock above any flood-tide of chance.

The valuation for the past year has been made with all possible care to avoid error, and the results are arranged in tables similar to those of last year. No doubt considerable inaccuracies have crept in among the calculations, extending to 55,360 single policies, not to speak of several thousand bonuses or reversionary additions; but we believe they do not appreciably affect the results. These show a most gratifying increase, both of the business and stability of the Companies. The ratio of the aggregate actual premium reserve to the computed is considerably greater, and the ratio of expenses to receipts is hardly 1 per cent. greater, though competition has been greatly increased by the creation of several new Companies. New Companies planted within the shadow of flourishing old ones, cannot be expected to get into successful operation without expending on their machinery more than the premium receipts for one, two, or perhaps three, of the first years. And it is, therefore, no wonder that some of the new Companies show the necessity of a guarantee capital.

This capital has in all cases been paid in cash, and invested in good securities, and if the new Companies' terms of insurance are just and liberal to the insured, there is no reason why energy, fidelity, and perseverance on its part should not soon place it beyond the need of guarantee funds. It is very true that the struggle may be arduous, and the present risk of the capital is considerable. The chance for the public-spirited capitalist to escape without loss is not such as to encourage the creation of new Companies. The worst, however, that can happen to the policy-holder with such a guarantee is, that he will not, quite so soon as he might, begin to receive back surplus from his premium; for if the capital should become too much impaired, its owners will save it from utter loss by getting their risks transferred to a strong Company. But the money spent in these experiments is by no means thrown away, even if the Companies do not succeed. The old Companies, since they probably catch the greater part of the birds started up when the bush is vigorously beaten, no matter who beats it, ought to treat the new ones with great kindness and even gratitude.

We have this year, as last, taken pains to give the ratio of our computed premium reserve to the amount insured for each year; because, by observing this ratio, it will be seen that an empirical rule, very simple and easy of practical application, may be established for ascertaining a *safe* premium reserve. It will, at any rate, do practically for all Companies that are large enough to dispense with a guarantee fund, and it is this:—

Divide the policies into groups, according to the number of annual premiums paid on each, then reserve of the amount insured in each group a percentage of twice the number of premiums paid on it. That is, on all the policies that have paid one premium, reserve 2 per cent. of the amount insured; on those that have paid two, 4 per cent.; on those that have paid three, 6 per cent., and so on.

This rule would give for all the Companies combined an aggregate reserve about 20 per cent. higher than our computed reserve, and somewhat less than the actual reserve, as will appear from the table. We do not by any means recommend this rule as a substitute for accurate arithmetical calculation, but as better than guessing without any guide.

In former Reports we have dwelt on an imperfection of life insurance, as usually practised, growing out of the nature of the contract. The insured in a whole-life policy pays in advance of the progress of the risk, and is bound to continue to pay the same premium annually during life, under the

penalty not only of releasing the other party to the contract, but of forfeiting all that he has advanced beyond the risk up to the time of non-payment. Theoretically, this bargain appears disadvantageous to the insured, for he may, among the uncertainties of life, find it desirable to retire from the contract. Practically, it has been made an objection to this system of insurance; and many practical minds have been employed to find a remedy for it as an evil. We have endeavoured heretofore to expose the nature of this evil, and suggest a remedy; but not till now have we been in a condition to ascertain and show its magnitude. The policies which were in force in 1858, and were returned as forfeited for non-payment of premium in 1859, might be reinstated in 1860, so that we could not last year fairly state them as forfeitures.

The returns of 1860 show how many were restored, and those that were not, will probably never be; or, at any rate, a very trifling proportion of them will be. We give the number and amounts forfeited in thirteen Companies, dividing them into classes according to the number of premiums paid. The net value of each class, when the premium was due, and not paid, is given, and shows what the Company gained—in addition to the policy-holder's share of accrued divisible surplus—by the forfeiture, supposing the life to have been of the average vitality. The additions or bonuses attached to policies as reversionary dividends, in some of the Companies, and forfeited with the policies, are also given in amount separately, and with their present value at the time of forfeiture.

The total of what all the Companies gained—exclusive of the relinquished share of the excess of the Companies' actual premium reserve over our net valuation—was 234,000 dollars. This, it is true enough, is a very inconsiderable sum compared with the annual income of the Companies, being only 3 per cent. additional to the receipts of that year; and it is to be reduced by the premium notes outstanding in some of the Companies against the forfeiting parties, which, of course, will never be collected.

Only two of the Companies—the Berkshire and the Massachusetts Mutual—return the amount of these notes, cancelled by the forfeiture of the policy. In the case of the Berkshire, the amount of cancelled notes was 4,002·06 dollars, reducing the gain by forfeiture to 2,119·09 dollars; in that of the Massachusetts, 5,351·34 dollars, reducing the gain to 1,429·12 dollars. In individual cases, the note cancelled was larger than the value of the policy, so that the retiring policy-holder got off without paying for more insurance than he received, or perhaps not paying for quite so much. For this reason the others lost the more. In other and older premium note Companies, where the amount of notes has been more reduced by dividend, the cancelled notes cannot bear so high a ratio to the value forfeited. We think it a very large allowance to estimate the premium notes on all these forfeited policies at 90,000 dollars, reducing the whole amount of profit from that source—aside from the proportion of surplus—to 144,000 dollars, or about $2\frac{1}{2}$ per cent. addition to the revenue of the year.

This average gain, however, it will be seen at a glance, was shared very unequally by different Companies. Some got nothing to speak of, or, say one-fifth of 1 per cent., others increased their revenue more than 16 per cent. by this means, or eighty times as much as the former. We do not wish to make invidious comparisons, but those who seek information can easily cipher for themselves, between the present Report and the last, the degree of cohesion which exists in these several institutions. Whatever

may be its strength in any, it plainly does not depend on the magnitude of the penalty in case of non-payment. Forfeiture occurs where many premiums have been fully paid in cash, and large reversionary additions have been made to the policy. One all-cash Company has had nearly 8 per cent. of its liability annihilated by forfeiture, while the half-note Company, which shows the largest amount of forfeiture, has had its liability diminished by only 2·18 per cent., and since the assets are diminished by the cancelled notes, the relative gain is still less. There is every reason to believe, from the study of this table, and an acquaintance with the officers, agents, and modes of management of the various Companies, that the strength of cohesion depends rather on the fairness and honour of the agents who solicit business, and the intelligence of the people on whom they operate.

Though the evil we have been endeavouring to measure is of no alarming magnitude, when viewed in its proportion to the whole business of the vast beneficent institutions to which it adheres with such wonderful tenacity, it is still large enough to be worthy of profound consideration. Successful motion depends on taking advantage of friction in the right place and avoiding it in the wrong, and friction depends on the minute quantities of matter which make the difference between a rough surface and a smooth one. It is often a slight filing and polishing which determines the question whether a well-proportioned and powerful machine shall work well and produce immense results, or run unprofitably and wear itself out. Smoothness of finish, at any rate, always saves oil and motive power.

Hence we cannot but recal the attention of the legislature to the legal remedy which we have heretofore explained at large, and which we need not here repeat. It proposes no interference with past contracts, but simply a provision of law that in the case of future ones nothing shall be forfeited beyond the policy-holder's share of accrued divisible surplus and the right to be insured beyond the term already fully paid for in cash,—the establishment of the principle, in fact, that the policy-holder or his representatives shall be entitled to all the insurance which he pays for, whatever may be the terms of the contract.

Corporations are the creatures of the legislature, and must undoubtedly conform the contracts they make to its will, when that will is once expressed. In this case, by expressing its will against a bargain, which, in point of morals, is no better than a bet, and an unfair one at that, we believe it will benefit the Life Insurance Companies no less than those who would otherwise become the victims of their peculiar mode of obtaining pay for service never to be performed. We do not in the slightest degree question that this is done with the best possible intentions. But we have all read of a bad place paved with those good materials. Practically the law is not needed against the best Companies, which are altogether better than their bargains. But Companies, such as have been and may yet be, under dishonest, reckless, and mercenary management, can and will, under such bargains, make a good thing, in a financial sense, of their bad credit, by sending out highly magnetic and glib-tongued agents into quarters where their standing is not well known—and the world will always be too large to have it known everywhere—and alluring men to take policies, who, after several premiums are paid, will discover their error, and forfeit what they have overpaid as the best mode of escape from greater loss. By such gains, in the mother country, Companies of virtual swindlers, under the name of Life Insurance, wasting, in profligate expenditures, a full third of all the

funds entrusted to them, have managed to exist through perhaps an entire generation, and make a show of solvency and respectability. They always court secrecy as to the ratio of their premium reserve to the net value of their policies, yet its insufficiency cannot be exposed without really enriching them by frightening the old policies into forfeiture, and when this has made their assets again equal to their liabilities, they will be able to recover from the temporary check given to their new business, and go on as before. In reality, for ingenious rogues, a Life Insurance Company, with the forfeiture clause in its policies, seems to be an engine for plunder with a principle of immortality in its very constitution. It seems incapable of death except by great destitution of intelligence on the part of the operators.

It is very pleasant to believe that none of the men who are charged with the management of the Companies now under our supervision, are of the sort to make any dishonourable use of this fault in the structure of their system. They all have the disposition, but they are unable, altogether to prevent it from transferring one or two hundred thousand dollars per annum, actually paid by some two thousand men for the benefit of the first fifty or sixty of their own widows, into the pockets of some forty or fifty thousand other probably more fortunate men to help them provide for their widows. We ask the State to help them prevent it.

Claims by Death against Sixteen Life Insurance Companies doing business in Massachusetts, for the year ending November 1, 1860.

Companies.	No. of Claims.	Amount.	Ratio of Loss to Amount Insured.	Ratio of No. of Claims to No. of Policies.
Massachusetts Hospital ..	4	$15,000 00	11·75	8·33
New England	18	74,302 00	0·57	0·45
State Mutual	9	12,107 54	0·42	0·50
Berkshire	8	21,000 00	1·17	0·93
Massachusetts Mutual	14	36,400 00	0·86	0·69
Mutual Life, N. Y.......	105	342,438 19	0·92	0·90
Mutual Benefit, N. J.	66	227,000 00	1·01	0·98
Connecticut, Ct.	94	235,700 00	1·31	1·02
National, Vt.	8	14,635 02	0·84	0·71
Union Mutual, Me......	25	61,900 00	1·42	1·35
Manhattan, N. Y.	20	75,698 00	0·73	0·62
Charter Oak, Ct.	23	47,317 51	0·74	0·69
American Temperance, Ct.	9	14,500 00	0·58	0·50
Knickerbocker, N. Y.....	3	8,000 00	0·43	0·42
Equitable, N. Y.........	3	14,000 00	1·73	1·72
Guardian, N. Y.	1	5,000 00	2·39	1·33
Totals........	410	$1,204,998 26	1·09	0·84

It is pleasant also to turn from this view of the short-coming of the Life Insurance Companies, to their magnificent well-doing, as exhibited in the above table of the termination of policies by death. Here we see in a single year more than 400 families, smitten by death of their natural protectors and providers, shielded against the most dreaded consequences of such a bereavement, by the distribution of more than a million of dollars.

This substantial aid to the ones they most loved, in the hour of their greatest need, cost the deceased a comparatively small sum of money. It was the result of a little prudence and self-denial, availing itself of a great law that governs human life, and really gives to what is called chance the calculable certainty of granite rocks and iron bars. It will be seen, from the figures elsewhere, that very few claims remain unsettled. The whole amount is usually paid without dispute, as soon as proper evidence of the death is submitted.

Want of time has prevented us from ascertaining how this mortuary experience has been distributed among the various ages, and what is its significance as illustrating the law of mortality among the lives at risk.

When the registration has attained greater age, and the constantly increasing number of policies has been submitted to observation for a considerable series of years, the results that may be deduced will be of a practical value far more than to compensate all the expenses of this office. And it is our design, so long as we are connected with it, to use every exertion to make the registration as accurate and fruitful of good results as the nature of the subject and the powers conferred by the law admit.

The following table, prepared from the returns of the year preceding the last, may serve to show how nearly for that year the actual mortality corresponded to the rate we have adopted as the basis of our valuation.

Mortality compiled from the Returns of Sixteen Life Insurance Companies doing business in Massachusetts, for the year 1859, *compared with the Combined Experience, Dr. Farr's English Table, and the experience of the Gotha Life Insurance Company, of Germany.*

Periods of Age.	No. of Losses.	No. of Years of Life exposed.	Ratio per Cent.	Com. Ex.	Farr.	Gotha.
Under 26	7	2,086·70	0·3354	—	—	—
26 to 30......	45	4,998·96	0·9002	0·81	0·97	0·87
31 to 35......	54	7,664·45	0·7045	0·89	1·10	0·92
36 to 40......	52	9,198·71	0·5653	0·99	1·25	1·00
41 to 45......	68	8,561·59	0·7942	1·13	1·42	1·04
45 to 50......	65	6,356·66	1·022	1·43	1·62	1·45
51 to 55......	58	3,923·19	1·478	1·91	1·87	1·82
56 to 60......	45	2,032·76	2·214	2·65	2·71	2·77
61 to 65......	15	908·12	1·651	3·79	3·95	3·83
66 to 70......	12	355·49	3·375	5·55	5·75	6·08
70 to 75......	3	105·66	2·839	8·13	8·32	9·04
75 to 80......	5	39·08	12·790	11·88	11·94	11·35
Over 80	1	5·00	20·000	17·22	16·90	23·94

Respectfully submitted.

ELIZUR WRIGHT.
GEO. W. SARGENT.

Boston, February 20, 1861.